

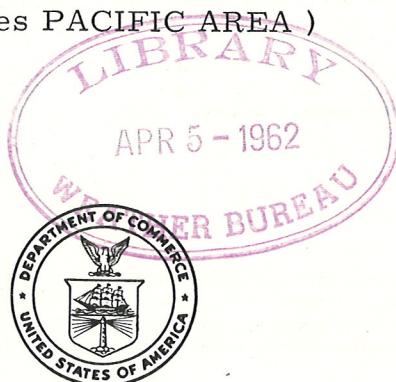
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CLIMATOGRAPHY OF THE UNITED STATES NO. 81-44

DECENNIAL CENSUS OF UNITED STATES CLIMATE—
MONTHLY NORMALS OF TEMPERATURE,
AND PRECIPITATION

HAWAII

(includes PACIFIC AREA)



WASHINGTON, D. C.:1962

PREFACE

The climatological standard normals presented in this publication are based on records for the 30-year period 1931-1960 inclusive. For the first time, normals have been computed for substations and divisions using a base period identical to that used for first-order stations.

Previous normals were published in Weather Bureau Technical Paper No. 31, "Monthly Normal Temperatures, Precipitation, and Degree Days," and were based on records for the period 1921-1950. Earlier sets of normals are described in [1].

This is the first series of publications resulting from the project "The Decennial Census of United States Climate, 1960." The project is a continuation of earlier censuses of the climate of the United States that date back to the early 19th Century and are described in [2]. Future publications of this project will be listings of daily normals of temperature, and degree days; summaries of hourly observations; and listings of monthly divisional averages of temperature and precipitation.

Units used in this publication are degrees F. for temperatures, and inches for precipitation.

Standard Normals for Weather Bureau First Order Stations

A normal of a climatological element is an arithmetic mean for a specific period of record which estimates the true mean of the element at the current exposure of the meteorological instrument measuring the element. The true mean is the mean of all possible observations (population) at the current exposure. It is from this population that future observations will come, not from values in the past record. This is what makes it important to obtain an estimate of this mean. The true mean can never be known exactly but must be estimated from a sample of the past record ([3] p. 53 section 4.3). The normals presented here are estimates of the true mean obtained from the 30-year sample record 1931-1960. They are called standard normals because they conform to the World Meteorological Organization standard for climatological normals.

If no exposure changes have occurred at a station the normal is estimated by simply averaging the 30 values from the 1931-1960 record. Since it is next to impossible to maintain a multiple purpose network of meteorological stations without having exposure changes, it is first necessary to find and evaluate these changes and then make adjustments for them if necessary.

Heterogeneities in record due to exposure changes are found in two ways: by determining them from the station histories and by use of statistical tests. The statistical test when standardized for the purpose is easy to apply and will often find heterogeneities which are not defined by the station histories as well as those which have been so determined. Two statistical tests were employed: one for temperature and the other for precipitation. These are described in [4].

After the periods of heterogeneity have been determined, adjustments are applied to remove the heterogeneities introduced into the mean. This is done by comparing the record at the base station, for which the normal is desired, to the record at a supplementary station with a homogeneous period which covers the heterogeneous period at the base station. The difference method is applied to the

monthly average maximum and minimum temperatures and the ratio method to the monthly total precipitation. A weighted average of the various partial means of the adjusted and unadjusted record is then prepared to give the normal. Brief discussions of the methods of adjustment are found in [3] (p. 49, section 4.24).

Normals for Substations and Divisions

Normals for substations were computed somewhat differently than those for first-order stations. Monthly substation normals are the simple arithmetic averages of the monthly values of temperature and precipitation for the period 1931-1960. These were computed for only those substations that were active during the entire period and no attempt was made to adjust for minor changes in location of the observing site, or for changes in the time of observation. Normals were not computed for substations that were moved a significant distance during the 1931-1960 period. Missing values in the data series were estimated by methods described in [5]. Substations whose locations were essentially unchanged during the 1931-1960 period are identified in the tables.

Monthly divisional normals are the means of the monthly divisional averages of temperature and precipitation for the period 1931-1960. In calculating the monthly divisional averages, all of the stations in the division that furnished both temperature and precipitation data during the particular month were used. The averages therefore were obtained from a variable station sample. As a result, the divisional normals often differ from the averages of the normals for stations in the division.

Annual substation and divisional normals are the averages of the 12 monthly temperature normals and the sums of the 12 monthly precipitation normals.

References

1. U. S. Weather Bureau, "History of Climatological Publications," Key to Meteorological Records Documentation No. 4.1, Washington, D. C., 1958.
2. H. E. Landsberg, "The Decennial United States Census of Climate 1960 and Its Antecedents," Key to Meteorological Records Documentation No. 6.2, U. S. Weather Bureau, Washington, D. C., 1960.
3. U. S. Weather Bureau, Climatology at Work, Gerald L. Barger, ed., Washington, D. C., 1960.
4. H. C. S. Thom, "Tests of Significance for Temperature and Precipitation Normals," U. S. Weather Bureau Manuscript, 1961.
5. U. S. Weather Bureau, Administrative Manual, Vol. III, Chap. C-05, paras. C-0509 and C-0510.

NOTES

1. Station Names

In Table I, "AP" after the city name indicates "airport station" "CO" indicates "city office station." Figures and letters following the station name indicate a rural location, and refer to the distance and direction of the station from the nearest post office.

indicates a station whose location has been essentially unchanged during the period 1931-1960.

H indicates the ground elevation of the station in feet above sea level, as of December 31, 1960.

G indicates the elevation at hygrothermometer site (where different from "H").

T indicates the height of the thermometer in feet above the ground as of December 31, 1960.

/NO TEST/ indicates that significant difference tests were not made.

2. Table Content

* indicates that the departure of the 1951-60 record from the 1921-50 normal is statistically significant, but through the adjustments for changes in location and exposure the absolute difference between old and new normals may even in these cases be very small.

T in the data tables indicates a monthly precipitation amount of only a trace.

February monthly normals are for a 28-day month.

TABLE I - NORMALS FOR FIRST ORDER STATIONS

STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	HAWAII
														ANNUAL
LIHUE AP	H 115 T 5	/NO TEST/	77.8	77.9	78.7	80.6	82.2	83.1	83.9	84.3	83.3	81.1	78.7	80.8
MAX TEMP	63.5	63.6	64.1	66.2	69.4	71.0	72.0	72.8	71.8	70.4	67.9	65.7	68.1	
MIN TEMP	50.5	50.5	50.7	51.0	52.5	54.5	56.6	57.6	58.4	57.4	54.5	52.2	54.5	
AVG TEMP	70.9	70.7	71.0	72.5	74.5	76.6	77.6	78.4	78.1	76.9	74.5	72.2	74.5	
PRECIP	5.51	5.32	4.56	3.34	2.59	1.46	1.94	2.46	2.08	4.03	4.53	5.18	4.300	
HONOLULU AP	H 7 T 35	/NO TEST/	79.1	78.8	79.2	80.2	81.8	83.8	84.6	85.2	84.2	82.0	79.2	81.9
MAX TEMP	65.8	66.0	66.4	68.1	70.0	72.0	73.0	73.8	73.2	72.1	69.7	67.9	69.8	
MIN TEMP	52.5	52.4	52.8	54.2	57.9	59.9	61.4	62.8	61.1	59.4	57.9	55.7	57.9	
AVG TEMP	72.5	72.4	72.8	74.2	75.9	77.9	78.8	79.4	79.2	78.2	75.9	73.6	75.9	
PRECIP	3.76	3.30	2.89	1.31	0.99	0.44	0.89	0.99	1.84	2.16	2.16	2.99	21.89	
HILO AP	H 31 T 7	/NO TEST/	78.7	78.6	78.2	78.9	80.4	82.0	82.4	83.1	82.9	82.5	80.4	80.6
MAX TEMP	62.6	62.6	63.0	65.6	66.6	67.4	68.4	68.1	67.6	67.6	65.9	64.1	65.5	
MIN TEMP	50.8	50.6	50.6	51.6	53.0	54.9	56.3	57.5	57.1	57.2	57.2	57.2	57.1	
AVG TEMP	68.0	67.9	68.0	69.7	71.6	73.0	74.9	75.8	75.5	75.1	73.2	71.5	73.1	
PRECIP	11.82	12.94	14.70	11.92	9.33	6.79	9.82	11.45	8.50	10.80	13.37	15.18	136.62	

TABLE II - NORMALS BY CLIMATOLOGICAL DIVISIONS

STATIONS (By Divisions)	TEMPERATURE (°F)												PRECIPITATION (In.)												ANNUAL	
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER		
ISLAND OF KAUAI																										
C#AAKUKUI 1007	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	69.55
#AHANOLA 1111	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	49.59
C#BRYDWOOD STA 985	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	49.59
C#EAST LAMA 934	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	59.61
C#ELELEE 927	71.0	70.9	71.2	72.7	74.4	76.3	77.1	77.7	77.6	76.8	74.6	74.4	4.80	3.94	3.33	1.69	1.32	1.00	1.26	2.10	1.44	2.71	2.95	4.18	30.72	
C#GROVE FARM 1021	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	53.78
C#HALALUA 1110	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	67.47
#HANAHAUOLU 1022	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	52.52
C#KALUAHONU 1005	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	48.50
C#KEALIA 1112	71.0	71.0	71.2	72.9	74.8	76.9	78.0	78.6	78.4	77.2	74.8	74.6	4.69	3.93	3.30	1.65	1.29	1.00	1.26	2.10	1.44	2.71	2.95	4.18	42.71	
#KEKAKA 944	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	20.07
C#KILAUEA 1134	69.2	69.2	69.3	70.6	72.4	74.4	75.2	75.5	74.7	72.7	70.6	72.5	8.13	6.12	5.51	5.00	3.27	4.44	4.99	3.40	5.01	5.61	4.04	4.45	46.45	
K#KILAUEA FLD 17 1135	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	67.47
C#KOLON 936	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	51.51
C#KOLOU HAUKA 994	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	52.00
C#KOLOA MILL 937	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	46.45
C#KUOKUILA 935	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	36.04
LIHUE 1020	70.2	70.1	70.2	71.5	73.4	75.4	76.2	76.9	76.7	75.6	73.5	71.3	7.34	5.23	4.52	3.86	2.29	3.74	4.26	3.37	4.01	4.61	3.88	4.04	22.95	
C#MAHAULEP 941	70.9	70.7	71.0	72.0	74.5	76.6	77.6	78.4	78.1	76.9	74.5	72.4	8.65	6.66	5.16	4.57	3.01	3.59	4.00	3.41	4.53	5.18	3.87	4.04	22.50	
C#MAHAWELI 965	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	22.93
MANA 1026	71.1	71.0	71.2	72.7	74.7	76.7	77.9	78.3	77.9	77.0	74.7	72.4	7.46	5.13	4.13	3.37	2.05	2.30	2.55	3.00	3.50	4.21	5.01	5.21	50.71	
C#MOLOA 1145	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	34.05
C#PAPUA 997	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	87.63
C#PM WAINIHA 1115	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	12.34
PRINCEVILLE RCH 111	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	151.05
C#PUUHUA 946	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	85.09
C#RESERVOIR 6 1004	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	34.04
#WAIMIAMA 930	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	22.05
C#WAHIAMA 990	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	22.05
#WAIAWA 943	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	20.55
WAIMEA 937	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	20.87
C#WEST LAHAI 931	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	42.44
ISLAND OF OAHU																										
C#AIEA FIELD 68	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	34.40
C#AIEA FIELD 75	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	34.40
C#AIEA FIELD 84	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	34.49
C#AIEA FIELD 86	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	35.06
BLACK POINT 717	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	42.71
#EWA PLTN 741	71.0	70.9	71.8	73.1	74.9	76.8	77.7	78.3	77.6	76.6	74.5	72.4	7.46	5.03	3.83	2.63	1.47	2.42	3.02	3.40	4.07	4.47	5.02	5.28	20.79	
#HEALEMANO INTAKE	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	20.79
#HEALEMANO RESERVOIR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	20.79
HONOLULU AP	72.5	72.4	72.8	74.2	75.9	77.9	78.8	79.4	79.2	78.2	75.9	73.6	7.36	5.20	3.89	2.62	1.45	2.17	3.03	3.47	4.02	4.62	5.23	5.82	78.35	
HONOLULU SUBSTA 704	72.5	72.4	72.8	74.2	75.9	77.9	78.6	79.4	79.2	78.2	75.9	73.6	7.36	5.20	3.89	2.62	1.45	2.17	3.03	3.47	4.02	4.62	5.23	5.82	78.35	
#HPSA EXP STA 707	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	36.30
C#KAHAKU 883	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	24.64
#KAHAKU HUKU 2,907	71.4	71.6	71.8	73.2	74.9	76.7	77.7	78.3	78.2	77.4	75.4	73.1	7.36	5.15	4.74	3.46	2.16	2.81	3.46	4.16	4.86	5.46	6.07	6.77	72.85	
#KAHAKU PUMP 2,907	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	39.94
#KALIHI RES 777	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	9.13
#KANEHO MAUKA 773	71.5	71.2	71.3	72.5	74.2	75.9	76.5	77.1	76.8	76.1	74.2	71.1	7.44	5.39	4.13	3.04	2.02	2.71	3.3							

TABLE II - NORMALS BY CLIMATOLOGICAL DIVISIONS

STATIONS (By Divisions)	TEMPERATURE (°F)												PRECIPITATION (In.)												HAWAII	
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	
ISLAND OF HOLOKAI																										21.99
#HOOLEHUA CPC 556	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	44.29
#KIPU 562	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	30.31
#KUALAPUU 534	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	39.84
MAPULEHU 542	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	27.84
#MAUNALOA 511	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
ISLAND OF LANAI																										35.83
#KOELE 693	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	34.99
#LANAI CITY 672	65.6	65.5	66.0	67.0	68.5	70.1	71.1	71.9	71.5	70.7	68.6	66.5	68.6	4.84	3.78	4.47	3.02	2.75	1.38	1.36	1.86	2.27	3.18	3.01	3.91	3.02
ISLAND OF MAUI																										48.84
#CAMP K 3 HCS 313	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	14.09
#CAMP 10 HCS 402	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	18.61
#HALEAKALA BES 434	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	72.77
#HALEAKALA R 432	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	43.20
#HAMAKUAPOKO 485	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
#HONOKOHUA 493	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	36.29
#HONOKOHUA INT 476	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	110.32
#KAHĀMĀPALI 453	72.4	72.1	72.7	74.1	75.8	77.8	78.6	79.3	79.3	78.0	75.8	73.4	75.8	4.06	3.74	4.08	3.18	2.68	1.68	1.68	2.58	1.68	2.68	3.32	4.65	3.32
#KAHOMA INT 374	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	15.91
#KA'LILILI 436	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	131.55
#KAILUA 446	68.4	68.1	68.1	69.1	70.4	71.9	72.7	73.2	73.3	72.7	71.0	68.9	70.7	8.56	10.47	12.18	11.53	9.92	7.57	10.15	11.31	7.50	9.33	10.05	11.85	120.39
#KAUĀAULA INT 375	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	45.91
#KEĀUAHA 410	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	20.64
#KEĀNAE 346	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	22.32
#KIMEI 311	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	12.53
#KIPĀPAHULU 258	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	104.32
#KŪLA SA 267	61.4	61.1	61.2	62.0	63.5	64.9	66.0	66.7	64.3	66.2	64.4	62.3	63.7	9.94	6.93	9.56	7.04	7.94	7.76	9.53	8.46	6.89	8.30	9.10	10.91	31.69
LAHAINA 361																										13.59
#LAU'NIUPOKO INT 376C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	2.38
#LAU'NIUPOKO VILLAGE 372	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	13.12
#LŪPŪI UPPER 442	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	45.27
MAHINAHINA 466																										83.20
#MOKUPEA 475	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	64.42
#OLOWALU 296	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	5.94
OLOWALU GULCH 377	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	43.31
#PA'AKEA 350	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	205.64
#PA'AIA A06	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	32.29
#PA'U'NELUA 490	70.8	70.2	70.1	71.0	72.3	73.9	74.4	75.5	75.7	75.4	73.8	71.6	72.9	3.87	3.56	4.05	3.13	1.19	1.89	1.92	1.84	2.15	2.56	2.97	3.69	6.80
PULEHU 315																										64.42
PUNALU'	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	17.08
#PU'UOKAHUA 2 343	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	15.99
#PU'UOKOLII 457	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	2.63
#PU'U KUKU 472	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	16.83
#PU'U NENE 396	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	32.06
#SPRECKELSVL 400	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	22.42
#UKULELE 333	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	69.31
#UKUNEHAME 301	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	13.10
#WAHIKULU 364	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	18.50
#WAIEHU CAMP 484	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	30.97
#WAIEHE 483	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	32.06
#WAIHEE VLY 482	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	4.08
WAIKAMOI 449	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	18.71
WAIPAU 390	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	24.71
WAILUKU 392	71.7	71.3	71.5	72.6	74.4	76.4	77.4	78.0	77.8	77.0	74.8	72.6	74.6	3.97	3.40	3.00	1.92	.58	.22	.33	.94	.95	1.04	1.14	2.37	
#WAIOPAI RANCH 256	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	22.68

TABLE II - NORMALS BY CLIMATOLOGICAL DIVISIONS

TEMPERATURE (°F)

PRECIPITATION (In.)

HAWAII

STATIONS (By Divisions)	TEMPERATURE (°F)												PRECIPITATION (In.)													
	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL
ISLAND OF HAWAII																										
#AHUA UMI 75	•	•	•	•	•	•	•	•	•	•	•	•	•	2.07	2.17	2.49	2.28	2.46	1.72	1.87	1.62	1.89	1.60	1.28	2.494	
#ALAKAHIA LWR 194	•	•	•	•	•	•	•	•	•	•	•	•	•	8.80	10.13	13.61	13.44	10.31	6.49	9.94	10.20	4.77	7.64	7.32	12.21	114.86
AHINI 182A	•	•	•	•	•	•	•	•	•	•	•	•	•	10.62	11.43	15.99	16.93	12.41	8.17	12.66	12.31	6.33	8.68	10.21	13.89	139.63
#HONOKANE 183B	•	•	•	•	•	•	•	•	•	•	•	•	•	13.13	12.93	18.93	18.54	14.27	12.70	16.26	16.39	8.60	9.53	11.98	18.06	171.32
#HAINA 214	69.5	69.5	69.5	70.0	71.4	73.0	74.1	74.5	74.0	72.0	70.2	71.9	5.06	6.92	7.67	4.92	1.92	3.46	2.29	5.25	5.67	4.06	4.06	4.06		
#HAKALAU 142	•	•	•	•	•	•	•	•	•	•	•	•	•	10.65	13.58	14.89	12.55	9.85	6.83	9.83	11.78	7.92	11.25	12.34	14.62	136.09
#HAKALAU MAUKA 135	•	•	•	•	•	•	•	•	•	•	•	•	•	14.70	17.78	22.47	20.93	16.83	10.81	16.29	19.33	12.18	15.90	16.88	20.12	204.42
(#)HALEPIIULA 117	58.1	57.9	57.9	59.1	60.6	62.0	62.9	63.6	63.3	62.9	60.8	58.7	60.7	12.22	10.25	11.98	8.40	6.07	4.53	5.12	7.59	5.09	6.88	10.18	10.14	98.45
HAWAII N P HQ 54	•	•	•	•	•	•	•	•	•	•	•	•	•	3.72	5.74	6.96	4.07	2.19	1.03	1.63	3.77	1.64	3.51	3.25	5.45	42.96
#HAWAII 168	•	•	•	•	•	•	•	•	•	•	•	•	•	4.70	6.92	5.22	5.04	3.56	3.93	4.19	3.61	4.02	5.92	4.97	4.97	49.76
HILO 86A	71.1	71.0	70.9	71.9	73.1	74.6	75.0	75.4	75.1	73.3	71.5	72.9	12.38	13.01	15.45	12.67	9.98	6.80	9.94	12.03	8.65	10.86	13.44	15.38	140.59	
#HILO A F 85	•	•	•	•	•	•	•	•	•	•	•	•	•	11.55	12.53	17.08	16.65	11.39	9.08	12.68	12.42	8.50	10.80	13.45	15.18	136.62
HILO AF	70.8	70.6	70.6	71.6	73.0	74.3	74.9	75.8	75.1	73.2	71.5	73.1	11.52	12.94	14.70	11.92	9.33	6.79	9.82	11.45	8.50	10.63	15.40	14.55	78.75	
#HOLUALOA 70	•	•	•	•	•	•	•	•	•	•	•	•	•	4.51	4.31	6.24	7.17	10.00	9.71	7.85	8.11	5.87	4.14	2.46	2.88	78.75
HOLUALOA BCH 68	•	•	•	•	•	•	•	•	•	•	•	•	•	2.30	1.86	2.47	2.31	2.65	3.33	2.54	2.86	2.71	2.48	1.77	1.56	28.84
#HONOHINA 137	•	•	•	•	•	•	•	•	•	•	•	•	•	11.75	15.65	17.94	15.49	12.31	7.72	11.97	13.74	9.21	12.87	13.71	17.19	159.55
HONOKA TOWN 215	•	•	•	•	•	•	•	•	•	•	•	•	•	7.12	9.59	12.02	10.68	7.12	2.77	5.32	6.03	3.02	6.54	7.53	10.86	88.60
HONOKANE 181A	•	•	•	•	•	•	•	•	•	•	•	•	•	10.62	14.14	14.93	13.28	10.43	7.23	12.04	11.11	8.51	10.63	15.40	14.55	78.75
#HONOMA MAKAI 143	•	•	•	•	•	•	•	•	•	•	•	•	•	16.06	18.32	21.12	18.98	15.25	10.49	15.00	17.65	11.73	15.71	17.59	21.60	199.50
#HONOMA MAUKA 138	•	•	•	•	•	•	•	•	•	•	•	•	•	3.77	3.43	4.10	2.49	4.63	4.10	4.07	3.34	3.34	2.22	1.64	1.55	39.18
#HONUALA 71	•	•	•	•	•	•	•	•	•	•	•	•	•	4.44	6.76	7.86	5.30	3.07	1.12	1.97	3.44	1.46	3.08	3.73	7.42	49.65
#HOPE A 114	•	•	•	•	•	•	•	•	•	•	•	•	•	1.76	1.85	2.05	1.39	1.86	1.41	1.51	1.42	1.75	.94	.60	.62	17.16
#HUALALAI 72	•	•	•	•	•	•	•	•	•	•	•	•	•	4.13	2.71	3.71	3.01	4.67	4.50	2.50	2.72	3.23	3.59	2.93	2.36	40.06
HUEHUE 92A	•	•	•	•	•	•	•	•	•	•	•	•	•	5.21	7.68	9.61	5.73	3.22	1.61	2.76	5.40	2.21	4.69	4.92	8.46	61.50
#KAALAI 123	•	•	•	•	•	•	•	•	•	•	•	•	•	3.73	3.40	4.90	4.96	6.37	6.69	7.08	6.59	6.91	5.82	3.58	2.83	62.86
KAANALAU 29	•	•	•	•	•	•	•	•	•	•	•	•	•	3.96	3.39	5.28	5.66	7.70	7.95	8.55	7.69	7.60	6.20	4.27	3.01	71.26
#KAANALIU 738	•	•	•	•	•	•	•	•	•	•	•	•	•	4.31	4.22	4.27	3.89	2.76	1.78	2.64	3.08	1.30	2.29	2.67	4.69	37.90
KAAMELA	•	•	•	•	•	•	•	•	•	•	•	•	•	2.24	2.37	2.97	2.61	2.94	2.28	2.61	2.22	2.15	1.62	1.31	2.16	28.16
#KANAHABA 74	•	•	•	•	•	•	•	•	•	•	•	•	•	9.01	7.53	7.34	5.10	4.01	2.15	4.38	4.09	5.60	6.23	4.67	6.21	62.21
KAPAPALA RCH 36	•	•	•	•	•	•	•	•	•	•	•	•	•	7.39	7.28	6.05	5.17	5.05	5.18	5.48	5.47	5.92	5.25	6.58	4.47	70.38
#KOHALA 179A	70.5	70.1	70.3	71.0	72.3	73.6	74.3	75.0	75.3	74.7	72.9	71.4	72.6	4.77	4.48	5.82	5.79	4.24	3.39	4.55	4.97	4.53	4.58	5.65	56.63	
#KOHALA MAUL 176	69.5	69.4	69.4	70.3	71.9	73.4	74.1	74.7	74.6	74.1	72.0	70.1	72.0	5.23	5.96	8.78	4.97	6.73	5.18	6.02	5.94	5.00	6.44	9.27	83.51	
#KOHALA MIS 175A	•	•	•	•	•	•	•	•	•	•	•	•	•	5.94	9.25	10.33	6.66	4.37	2.37	3.61	6.93	3.36	6.25	6.60	10.20	75.87
#KOTIAWE LOWER 196	•	•	•	•	•	•	•	•	•	•	•	•	•	10.32	10.06	12.70	12.62	9.17	7.33	9.55	9.19	4.87	6.15	8.29	12.40	113.15
KUKATUA 222	•	•	•	•	•	•	•	•	•	•	•	•	•	7.65	11.65	14.61	13.42	8.61	3.41	6.38	8.14	3.62	7.85	9.47	13.22	108.03
#KUKUIHAELA HIC 199	70.7	70.5	70.4	71.4	72.7	74.2	74.9	75.4	75.6	74.8	73.2	71.1	72.9	6.13	7.31	10.04	9.23	6.71	3.03	5.54	4.97	2.79	5.94	6.76	78.68	
#KUKUIHAELA ML206	•	•	•	•	•	•	•	•	•	•	•	•	•	4.59	5.74	7.52	6.39	4.43	2.05	4.24	5.65	4.24	4.97	7.17	57.58	
#HANUILI 179	71.6	71.5	71.4	72.0	73.4	74.9	75.4	76.0	76.2	76.1	76.0	74.2	72.6	4.16	4.56	5.70	6.72	5.52	4.05	4.24	5.05	3.72	6.15	10.46	106.71	
OLAA 92	70.3	70.3	70.3	71.1	72.5	73.7	74.4	75.1	74.9	74.4	72.6	71.0	72.6	12.46	13.39	15.58	12.42	9.88	7.84	10.14	11.75	5.78	7.02	8.41	14.66	106.71
#OOKALA 223	70.8	70.2	70.4	71.2	72.8	74.3	74.8	75.5	75.0	73.0	71.1	72.4	8.17	11.84	13.80	9.26	4.60	7.24	1.77	4.37	2.93	4.61	5.54	4.97	49.67	
#PAAPAUH 217	•	•	•	•	•	•	•	•	•	•	•	•	•	5.31	7.15	8.80	8.04	5.20	1.82	3.67	4.56	2.35	5.22	5.87	9.22	66.29
#PAAPUULO 221	69.0	68.8	68.9	69.8	71.0	72.2	73.2	74.0	73.7	73.2	71.8	70.1	71.3	7.89	11.62	14.22	12.99	8.23	2.97	5.84	7.07	3.31	7.26	8.79	12.51	102.70
#PAHALA 21	•	•	•	•	•	•	•	•	•	•	•	•	•	13.05	13.13	15.21	11.52	9.95	8.07	10.49	11.50	9.31	11.97	13.49	16.07	143.76
#PAHOA 65	•	•	•	•	•	•	•	•	•	•	•	•	•	6.57	6.36	6.82	5.33	5.00	2.78	3.72	5.79	4.57	5.68	4.45	3.35	60.42
PAPAIKOU 144A	•	•	•	•	•	•	•	•	•	•	•	•	•	12.02	13.45	15.09	12.32	9.90	6.88	10.23	12.06	8.56	11.69	12.54	15.67	140.41
#PAPAIKOU MAU 140A</td																										

TABLE I - NORMALS FOR FIRST ORDER STATIONS

PACIFIC ISLANDS

STATION		JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL		
CANTON AP	H 8 T 5	/NO TEST/	88.4 77.8 83.1 2.61	88.2 77.7 83.1 2.13	88.5 77.9 83.6 2.49	89.3 78.1 83.6 3.62	89.7 78.0 83.8 4.35	89.5 77.7 83.5 2.65	89.4 77.7 83.6 2.59	89.3 77.7 83.5 1.24	89.5 77.8 83.7 1.10	89.6 77.9 83.6 1.61	89.2 77.8 83.7 1.61	88.4 77.8 83.5 2.54	89.1 77.8 83.5 29.43	
JOHNSTON AP	H 7 T 6	/NO TEST/	80.7 73.4 77.0 3.89	80.7 73.4 76.9 1.53	81.0 74.1 77.2 2.34	81.8 75.3 79.2 2.28	83.0 76.4 79.2 9.99	84.2 76.4 80.3 8.84	85.0 77.1 81.0 1.30	85.5 77.5 81.6 2.26	85.6 77.5 80.9 2.35	84.8 76.9 80.9 3.27	83.4 75.8 79.6 2.06	81.7 74.4 78.0 3.00	83.1 75.4 79.3 26.11	
GUAM WB	H 361 T 6	/NO TEST/	83.9 72.4 78.1 4.63	84.4 72.2 78.3 3.49	85.3 72.4 78.3 2.64	86.4 73.3 78.9 3.03	87.1 73.1 78.3 4.19	87.3 72.3 78.2 5.87	86.7 72.2 79.1 8.98	86.4 72.5 79.3 12.84	86.2 72.7 79.2 13.36	85.8 73.3 79.3 13.10	85.2 73.0 78.7 10.29	84.6 72.7 79.2 6.11	85.0 72.9 88.53	
WAKE AP	H 11 T 6	/NO TEST/	81.5 73.3 77.4 1.14	81.5 72.7 77.1 1.35	82.2 73.4 77.7 1.47	82.8 74.0 78.4 1.87	84.2 75.3 79.7 2.04	85.9 76.9 81.4 1.90	86.6 77.4 82.0 4.60	87.0 77.7 82.4 7.08	87.1 77.8 82.5 5.24	86.1 77.1 81.6 5.27	84.5 76.3 80.4 5.08	82.8 75.6 80.0 1.82	84.4 75.6 80.0 36.86	
ENIWETOK AP	H 13 T 5	/NO TEST/	84.6 77.8 81.2 1.02	84.3 77.5 80.9 1.84	84.9 77.7 81.3 1.86	85.7 78.5 82.1 1.28	85.9 78.9 82.4 4.57	86.4 79.2 82.8 3.37	86.5 79.1 83.0 6.45	86.8 79.2 83.3 6.24	86.8 79.2 83.0 9.09	86.1 79.1 82.4 6.20	85.3 78.7 82.3 6.30	85.9 78.7 82.3 51.46		
KOROR WB	H 94 T 5	/NO TEST/	86.0 74.6 80.3 11.73	86.1 74.7 80.7 7.13	86.7 75.3 81.3 7.63	87.3 75.4 81.3 10.39	87.2 75.3 81.3 14.63	86.9 76.9 81.4 12.98	86.6 77.4 80.8 15.17	86.7 77.8 81.0 15.76	86.8 77.8 80.9 14.33	86.1 77.1 81.2 13.09	84.5 75.1 81.2 12.93	82.8 75.1 80.9 11.72	84.6 75.1 80.9 147.49	
KWAJALEIN AP	H 8 T 6	/NO TEST/	82.2 78.0 80.1 3.61	82.0 78.2 80.4 2.15	82.7 78.4 80.4 6.46	83.2 78.6 80.8 5.02	83.7 78.3 81.1 8.18	84.4 78.3 81.3 8.68	85.2 77.9 81.6 8.91	85.9 77.9 81.9 9.51	85.9 78.1 81.3 9.19	84.5 78.3 81.3 10.19	82.2 78.3 81.1 10.88	84.1 78.1 81.1 9.476		
MAJURO AP	H 10 T 7	/NO TEST/	84.1 76.3 80.2 6.98	84.3 76.4 80.4 8.55	84.7 76.2 80.5 11.72	84.9 76.0 80.5 12.31	84.7 75.8 80.3 12.75	84.4 75.7 80.1 12.84	84.6 75.6 80.1 12.53	84.7 75.5 80.3 11.68	85.0 75.7 80.5 12.06	85.1 75.9 80.5 15.17	84.8 76.1 80.5 15.92	84.4 76.2 80.3 11.12	84.7 76.0 80.3 143.63	
PONAPE WB	H 120 T 5	/NO TEST/	85.6 75.3 80.4 11.07	85.5 75.4 80.4 9.74	85.9 75.2 80.5 14.55	86.0 74.9 80.5 20.04	86.3 74.9 80.4 20.31	86.4 75.3 80.1 16.70	86.6 75.7 79.7 16.22	86.8 76.2 79.4 16.32	87.0 76.9 79.5 15.81	87.1 77.2 79.6 15.97	86.7 77.0 79.8 15.85	86.0 77.3 80.1 18.34	86.3 77.0 80.0 191.92	
TRUK AP MOEN	H 5 T 5	/NO TEST/	84.9 76.5 80.7 8.40	84.9 76.4 80.6 6.29	85.1 76.5 80.8 7.75	85.1 76.3 80.8 12.32	85.3 75.6 80.9 14.12	85.8 75.6 81.9 11.87	86.1 74.8 81.9 12.33	86.1 74.6 81.4 12.61	86.1 74.7 81.3 12.58	86.2 74.9 81.4 13.45	85.2 75.6 80.8 12.36	85.6 75.7 80.8 (13.24)	85.6 75.7 80.7 137.52	
YAP WB	H 55 T 5	/NO TEST/	85.4 75.6 80.4 7.87	85.3 75.5 80.4 4.64	86.0 76.5 81.0 5.38	87.0 76.5 81.7 6.38	87.6 75.9 81.9 9.52	87.9 75.9 81.9 10.72	87.5 75.1 81.4 13.78	87.5 75.0 81.4 14.70	87.8 75.2 81.4 14.01	87.9 75.6 81.5 13.19	87.3 75.6 81.5 11.15	86.2 75.8 81.0 11.15	87.0 75.6 81.3 10.16	87.0 75.6 81.3 121.50

1963 REVISIONS AND ADDITIONS TO
CLIMATOGRAPHY OF THE UNITED STATES NO. 81-44
HAWAII AND PACIFIC AREA
TABLE I — NORMALS FOR FIRST ORDER STATIONS

HAWAII	STATION	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
KAHULUI AP	MAUI													
*	H 44 T 6													
	MAX TEMP	80.8	80.4	80.4	81.4	83.4	85.4	86.4	87.0	86.7	85.5	82.9	80.6	83.4
	MIN TEMP	63.4	63.0	63.9	65.3	67.1	68.9	70.1	71.0	70.0	69.1	67.0	64.8	67.0
	Avg TEMP	72.1	71.7	72.2	73.4	75.3	77.2	78.3	79.0	78.4	77.3	75.0	72.7	75.2
	DEG DAYS	0	0	0	0	0	0	0	0	0	0	0	0	0
	PRECIP	3.14	2.54	2.22	1.44	.69	.18	.43	.35	.25	.87	1.52	2.70	16.33
PACIFIC ISLANDS														
CANTON AP	H 8 T 5													
	AVG TEMP		83.0											
JOHNSTON AP	H 7 T 6													
	AVG TEMP	77.1	77.0		78.0			81.1						78.1
GUAM WB	H 361 T 6													
	AVG TEMP	78.2		78.8	79.9	80.4						79.3		79.3
WAKE AP	H 11 T 6													
	AVG TEMP			77.8		79.8								
KOROR WB	H 94 T 5													
	AVG TEMP											81.0		
KWAJALEIN AP	H 8 T 6													
	AVG TEMP				80.5			81.4		81.9				
	PRECIP									9.59				
MAJURO AP	H 10 T 7													
	AVG TEMP				80.6	80.6			80.2	80.2	80.4			80.4
PONAPE WB	H 120 T 5													
	AVG TEMP	80.5	80.5	80.6								79.7	79.9	80.2
TRUK AP	MOEN H 5 T 5													
	AVG TEMP			80.7										
YAP WB	H 55 T 5													
	AVG TEMP	80.5			81.8	82.0								81.6

* NEW STATION

REVISIONS TO FIRST ORDER STATIONS IN TABLE I AFFECT THE SAME STATIONS IN TABLE II.

USCOMM-WB-Asheville, N.C. -3/31/64-2000

